The procedure involves the use of brilliant two-colored indicators, such as those recommended by Clark and Lubs, applied to soil extracts obtained without filtration by the use of a centrifuge.

In work being published elsewhere, L. A. Hurst and the writer have compared the electrometric method with the improved colorimetric method as described by Clark and Lubs[3] and have found a very close agreement in the results of the two methods applied to soils. We have found it advisable for soil work to use the phenol-sulfon-phthalein indicators in water solution as the monosodium salts, and to use (pure) methyl red, without neutralization, in alcoholic solution.

In previous papers from this laboratory the suggestion has been made that the occurrence of the common potato scab may be limited by the hydrogen-ion concentration of the soil.[4] In the work mentioned above this seems to have been demonstrated.

There have been located now two points of interest on the scale of hydrogen-ion exponents for soils: (about) 6.0, the acid limit for *Azotobacter,* and (about) 5.2, the acid limit for the potato-scab organism. In addition to these organisms, other important soil organisms have been studied in their relation to hydrogen-ion exponent in culture media.[5] In general, such pure culture studies should be supplemented with soil studies, for a number of reasons, one of which is that strains of unusual resistance to acidity might be missed in the study of a limited number of strains in pure culture.

From the considerable quantity of work done some years ago in culture media, it was to be expected that limits of hydrogen-ion concentration should be discoverable for the growth and survival of microorganisms in soil, providing only that the soil has a definite and significant hydrogen-ion concentration. That the soil has definite and biologically significant hydrogen-ion concentration has been demonstrated by the work of this laboratory. The expectation may be different with regard to the growth of crops, since (1) very little work involving real control of hydrogen-ion concentration has been done on this subject,[6] and (2) the welfare of crops may depend in some cases on the success of *Azotobacter,* of legume bacteria, or of other microorganisms less resistant to acidity than the plant itself. We do not yet know whether, for instance, a point can be located, in acid soils not altogether infertile, beyond which acidity the growth of red clover is always more or less unsatisfactory; we have seen, however, some indications that such a point may exist at about the exponent 5.

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[3] *Jour. Bact.,* Vol. 2, Nos. 1, 2, 3, 1917.

[4] Gillespie and Hurst, *Soil Science,* Vol. 4, pp. 313–319, 1917, and Gillespie, *Phytopathology,* Vol. 8, pp. 257–269, 1918.

[5] *E. g.,* E. B. Fred, *Abstracts of Bacteriology,* Vol. 2, pp. 10–11, 1918.

[6] See Hoagland, *Soil Science,* Vol. 3, pp. 547–560, 1917, who studied the barley plant.

THE NEED OF ANOTHER PHILANTHROPIST BY ORGANIC CHEMISTS

Wanted, available sets of the greatest of all reference books in organic chemistry, Beilstein's "Handbuch der Organischen Chemie," for the immediate use of organic chemists in the numerous governmental and industrial laboratories. Why? Because these chemists have been laboring under a serious handicap for the past four years, especially in the preparation of war chemicals and explosives, medicinals, and dyestuffs. How can this pressing need be met? In a timely editorial in the September number of *The Journal of Industrial and Engineering Chemistry* Dr. Charles H. Herty has shown that photographic methods are available for the reproduction of this valuable work at a comparatively low cost. Who is to finance the preparation of the zinc etchings? There is probably some man of wealth who can appreciate the present need of the organic chemist and come to the rescue. The need is urgent. It should be met and met immediately.

The first appeal[1] for financial assistance in

[1] Science, N. S., Vol. XLVII., pp. 225–228 and pp. 590–591.

the preparation of rare and difficult organic chemicals has brought about the establishment of a source of supply of organic reagents for research in colleges and universities and for industrial purposes. This was met by an industrial establishment[2] which set apart a separate section of its laboratory for this purpose.

It seems to me that the present emergency is still more urgent. A tremendous amount of time is lost by the chemist in looking through the literature in the libraries for the details of preparation and properties of known organic compounds. Beilstein's "Handbuch" is a compilation of all the organic chemicals existing at the time of its publication. The need of available sets of this standard work of reference is self evident.

To quote the editorial in part:

> We would suggest and urge a reprinting of Beilstein under conditions which would make it available quickly to all organic chemists. To do this through the ordinary process of linotyping and proof-reading would be impracticable because of the present shortage of labor and the lack of knowledge of German on the part of linotypists and proof-readers accustomed to chemical literature. Fortunately, photographic methods are available, requiring a minimum of labor and insuring speed and absolute accuracy of reproduction.
>
> To make the proposition definite we have obtained prices for zinc etchings from one of the largest engraving houses of New York City. For the 11,126 pages of Beilstein the cost of zinc etchings at standard prices would be $30,040.20. For paper and press work (calculating on the quality of paper and charges for press work in publishing this journal), $6,119.30 would be required for one thousand sets, making a total of $36,159.50. Allowing for constantly advancing prices, and for royalty charges, $40,000 should safely cover the entire costs, not including binding, of course.
>
> Do we feel any qualms of patriotic conscience about such a reproduction? Well, we should worry! Germans are daily profiting in the conduct of the war through the utilization of American inventions, the submarine, the telegraph, the telephone, the machine gun and what not. Let some one donate $30,000 and let the sets be sold at $10 each (the ordinary cost is $100) so that every organic chemist could have one right at his hand, then—let the Germans worry.

A donation for this worthy cause would be a lasting memorial to any man, and would place him among the great benefactors to the science of chemistry. Who is the philanthropist that will *immediately* set the zinc to etching?

CLARENCE AUSTIN MORROW
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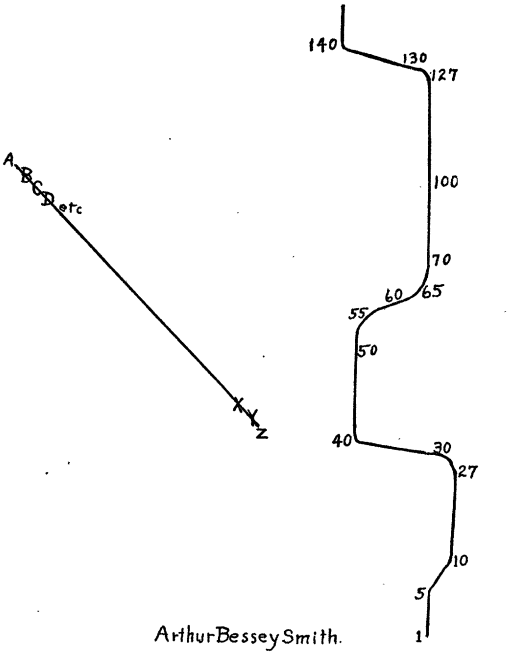
UNIVERSITY OF MINNESOTA

[2] SCIENCE, N. S., Vol. XLVII., pp. 91–92.

COLOR ASSOCIATION

TO THE EDITOR OF SCIENCE: The letter from David Starr Jordan[1] called to my attention a fact which I did not know before. On mentioning it to my laboratory assistant, Mr. Herbert Edward Clapham, he said that he, too,



associated colors with the letters of the alphabet, but not with all, and that figures were also associated with colors. At my request he wrote out the following list.

A gray	O black	1 white
B light red	P brown	2 red
C black	Q — — —	3 light red
D pink	R — — —	4 gray

[1] SCIENCE, September 28, 1917, pp. 311–312.